

§ 85.2231

40 CFR Ch. I (7–1–12 Edition)

a driving axle weight up to four thousand (4,000) pounds or greater.

(4) *Between roll wheel lifts.* For dual-roll dynamometers, these must be controllable and capable of lifting a minimum of four thousand (4,000) pounds.

(5) *Roll brakes.* Rolls must be locked when the wheel lift is up.

(6) *Speed indications.* The dynamometer speed display must have a range of 0 mph to 60 mph (or 0 kph to 100 kph), and a resolution and accuracy of at least 1 mph (or 1 kph).

(7) *Safety interlock.* A roll speed sensor and safety interlock circuit must be provided which prevents the application of the roll brakes and upward lift movement at any roll speed above 0.5 mph (0.8 kph).

(c) The dynamometer must produce the load speed relationships specified in §§ 85.2217 and 85.2219.

[58 FR 58414, Nov. 1, 1993]

§ 85.2231 On-board diagnostic test equipment requirements.

(a) The test system interface to the vehicle shall include a plug that conforms to SAE J1962 “Diagnostic Connector.” The procedure shall be done in accordance with SAE J1962 “Diagnostic Connector” (JUN92). This incorporation of reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552 (a) and 1 CFR part 51. Copies of SAE J1962 may be obtained from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001. Copies may be inspected at the EPA Docket No. A-94-21 at EPA’s Air Docket, (LE-131) Room 1500 M, 1st Floor, Waterside Mall, 1200 Pennsylvania Ave., NW., Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(b) The test system shall be capable of communicating with the standard data link connector of vehicles with certified OBD systems.

(c) The test system shall be capable of checking for the monitors supported by the on-board diagnostic system and the evaluation status of supported

monitors (test complete/test not complete) in Mode \$01 PID \$01, as well as be able to request the diagnostic trouble codes, as specified in SAE J1979. In addition, the system shall have the capability to include bi-directional communication for control of the evaporative canister vent solenoid. SAE J1979 is incorporated by reference and approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of all the SAE documents cited above may be obtained from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001. Copies may be inspected at the EPA Docket No. A-94-21 at EPA’s Air Docket, (LE-131) Room 1500 M, 1st Floor, Waterside Mall, 1200 Pennsylvania Ave., NW., Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(d) [Reserved]

[61 FR 40948, Aug. 6, 1996, as amended at 63 FR 24434, May 4, 1998; 66 FR 18179, Apr. 5, 2001]

§ 85.2232 Calibrations, adjustments—EPA 81.

(a) *Applicability.* The requirements of this subsection apply to short tests conducted under Emissions Performance Warranty through December 31, 1993. The requirements of § 85.2233 apply concurrently until December 31, 1993, after which the requirements of § 85.2233 are solely in effect. The following exceptions apply: In a state where the Administrator has approved a SIP revision providing for implementation of a basic centralized program meeting the requirements of part 51, subpart S of this chapter, according to the schedule specified in § 51.373 of this chapter, the requirements of this section are concurrently in effect until June 30, 1994 for 1995 and earlier model year vehicles or engines; in a state where the Administrator has approved a SIP revision providing for implementation of an enhanced program meeting the requirements of part 51, subpart S

of this chapter, according to the schedule specified in § 51.373 of this chapter, the requirements of this section are concurrently in effect until December 31, 1995 for 1995 and earlier model year vehicles or engines.

(b) Equipment shall be calibrated in accordance with the manufacturers' instructions.

(c) *Hourly checks.* Within one hour prior to a test, the analyzers shall be zeroed and spanned. Ambient air is acceptable as a zero gas; an electrical span check is acceptable. Zero and span checks shall be made on the lowest range capable of reading the short test standard. Analyzers that perform an automatic zero/span adjustment every time a test sequence is initiated are considered to meet the hourly checks.

(d) *Daily checks.* Within eight hours prior to a loaded test, the dynamometer shall be checked for proper power absorber settings.

(e) *Weekly checks*—(1) *Leak check.* For analyzers with a separate calibration or span port, CO readings using the span gas through the probe and through the calibration port shall be made and compared; discrepancies of over 3% shall require repair of leaks. No analyzer adjustments shall be permitted during this check. The leak check and the following gas span check may be combined into one operation.

(2) *Gas span check.* Within one week of the test, the analyzers shall have been spanned using calibration gases which meet the requirements in paragraph (d)(4) of this section and shall not have been readjusted since to a non-conforming gas. If the analyzer reads the span gas within 2% of the span gas value or within .05% CO and 6 ppm HC (use the larger of the two tolerances), then no adjustment of the analyzer is needed. For this check the span gas may be introduced either through the calibration port (if so equipped) or through the probe. This paragraph does not prevent those who wish to always adjust the analyzer to the exact span value from doing so.

(3) *Gas span adjustment.* If the analyzer fails to meet the gas span check specifications, then the analyzer shall be adjusted by the following procedures:

(i) For analyzers *without* a calibration port, perform a simple leak check (e.g., cap the probe). Repair any leaks before continuing with this procedure. Introduce the span gas through the probe for this adjustment.

(ii) For analyzers *with* a calibration port, introduce the span gas through the port for this adjustment.

(iii) Perform a zero adjustment and a flowing span gas adjustment. Iterate between span and zero, as necessary, to obtain stable readings within the gas span check specifications.

(iv) Check the electrical span *without* changing the zero or span adjustments set in step (iii). If the electrical span does not match the electrical span line or voltage level, locate the potentiometer that controls the relationship between the gas span and the electrical span. Adjust this control until the electrical span target is achieved.

(v) Following this procedure, if the gas span value cannot be held within the 2% tolerance (or .05% CO and 6 ppm HC) while also meeting the electrical span criteria, then the analysis system and calibration bottle shall be removed from service until the problem is resolved and the adjustment tolerance met.

(vi) Automatic analyzers that perform either a substantially similar adjustment procedure or mathematical correction procedure are considered to meet this adjustment procedure.

(4) *Span gases.* The span gas used for the weekly check shall be traceable to NBS standards $\pm 2\%$ and have concentrations either:

(i) Between the standards specified in this subpart and the jurisdiction's inspection standards for the 1981 model year light duty vehicles, or

(ii) Within -50% to $+100\%$ of the standards in this subpart.

(f) *Other checks.* In addition to performing span and leak checks on a periodic basis, these checks shall also be used to verify system performance under the following special circumstances.

(1) *Gas span check.* Within one week of the test, the analyzers must have been spanned using calibration gases which met the requirements in paragraph (e)(4) of this section and must not have been readjusted since to a

non-conforming gas. If the analyzer reads the span gas within two percent of the span gas value or within .05 percent of the CO and 6 ppm HC (use the larger of the two tolerances), then no adjustment of the analyzer is needed. (However, adjusting the analyzer to the exact span value is not precluded.) For this check the span gas may be introduced either through the calibration port, if so equipped, or through the probe.

(2) *Leak checks.* Each time the sample line integrity is broken, a leak check shall be performed prior to testing. A simple vacuum leak check (i.e., block the probe and check for low flow) is considered acceptable for these non-periodic checks.

[49 FR 24323, June 12, 1984. Redesignated and amended at 58 FR 58403, 58415, Nov. 1, 1993]

§ 85.2233 Steady state test equipment calibrations, adjustments, and quality control—EPA 91.

(a) *Special calendar and model year applicability.* The requirements of § 85.2232 apply concurrently for tests conducted under Emission Performance Warranty on 1995 and earlier model year vehicles or engines until December 31, 1993, after which the requirements of this section are solely in effect. The following exceptions apply: in a state where the Administrator has approved a SIP revision providing for implementation of a basic centralized program meeting the requirements of part 51, subpart S of this chapter, according to the schedule specified in § 51.373 of this chapter, the requirements of § 85.2232 are concurrently in effect until June 30, 1994 for 1995 and earlier model year vehicles or engines; in a state where the Administrator has approved a SIP revision providing for implementation of an enhanced program meeting the requirements of part 51, subpart S of this chapter, according to the schedule specified in § 51.373 of this chapter, the requirements of § 85.2232 are concurrently in effect until December 31, 1995 for 1995 and earlier model year vehicles or engines.

(b) Equipment must be calibrated in accordance with the manufacturers' instructions.

(c) *Prior to each test—(1) Hydrocarbon hang-up check.* Immediately prior to

each test the analyzer automatically performs a hydrocarbon hang-up check. If the HC reading, when the probe is sampling ambient air, exceeds 20 ppm, the system must be purged with clean air or zero gas. The analyzer must be inhibited from continuing the test until HC levels drop below 20 ppm.

(2) *Automatic zero and span.* The analyzer conducts an automatic zero and span check prior to each test. The span check must include the HC, CO, and CO₂ channels and, if present, the NO channel. If zero and/or span drift cause the signal levels to move beyond the adjustment range of the analyzer, it must lock out from testing.

(3) *Low flow.* The system locks out from testing if the sample flow is below the acceptable level as defined in § 85.2225(c)(6).

(d) *Leak check.* A system leak check is performed within 24 hours before the test in low volume stations (those performing less than 4,000 inspections per year) and within four hours in high-volume stations (4,000 or more inspections per year) and may be performed in conjunction with the gas calibration described in paragraph (e)(1) of this section. If a leak check is not performed within the preceding 24 hours in low volume stations and within four hours in high-volume stations or if the analyzer fails the leak check, the analyzer must lock out from testing. The leak check must be a procedure demonstrated to effectively check the sample hose and probe for leaks and is performed in accordance with good engineering practices. An error of more than ± 2 percent of the reading using low range span gas must cause the analyzer to lock out from testing, and requires repair of leaks.

(e) *Gas calibration.* (1) On each operating day in high-volume stations, analyzers must automatically require and successfully pass a two-point gas calibration for HC, CO, and CO₂ and must continually compensate for changes in barometric pressure. Calibration must be checked within four hours before the test and the analyzer adjusted if the reading is more than two percent different from the span gas value. In low-volume stations, analyzers must undergo a two-point calibration within 72 hours before each test, unless changes